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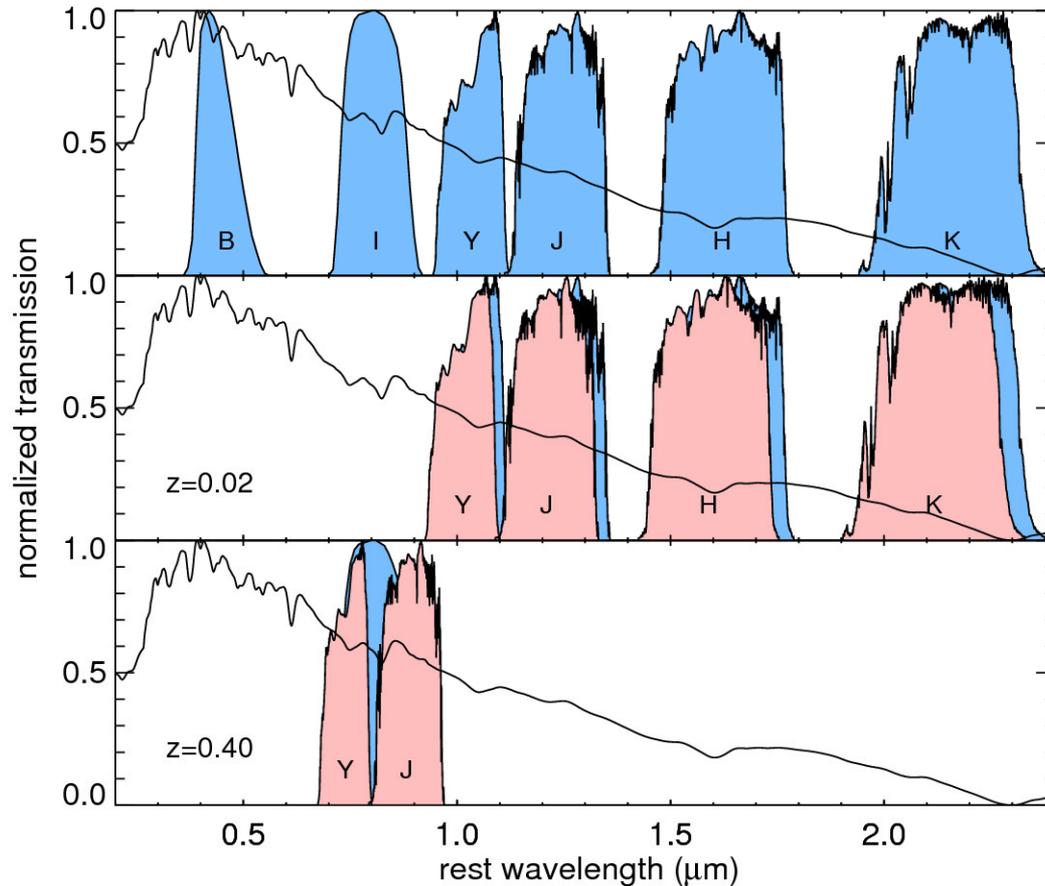
spectroscopic diversity of SNe Ia in the near-infrared

SNe Ia in the near-infrared

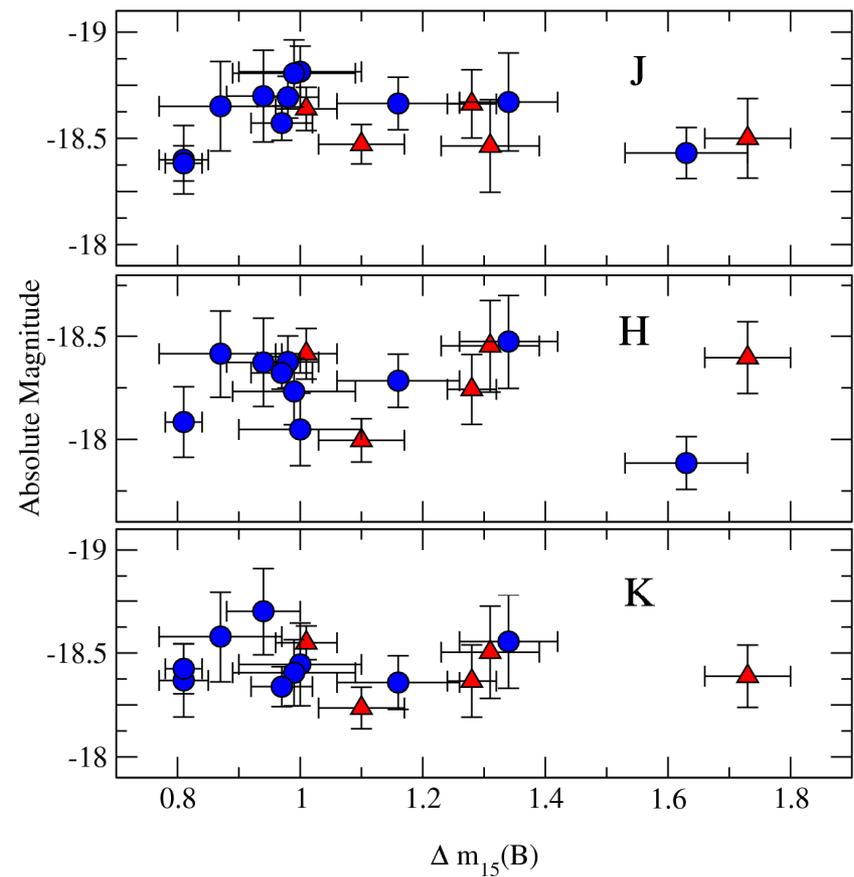
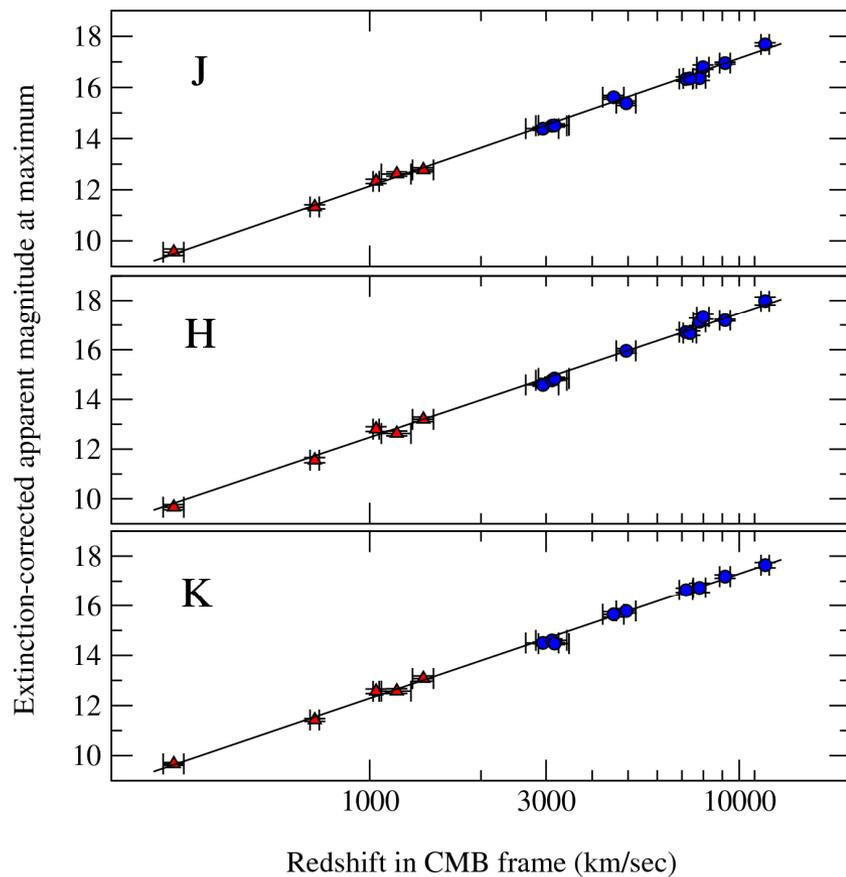
less dust extinction

- low redshift
 - standard candles in *JHK* bands
 - independent measure of Hubble constant
- high redshift
 - rest frame / band Hubble diagram
 - independent evidence of dark energy

SNe Ia in the near-infrared

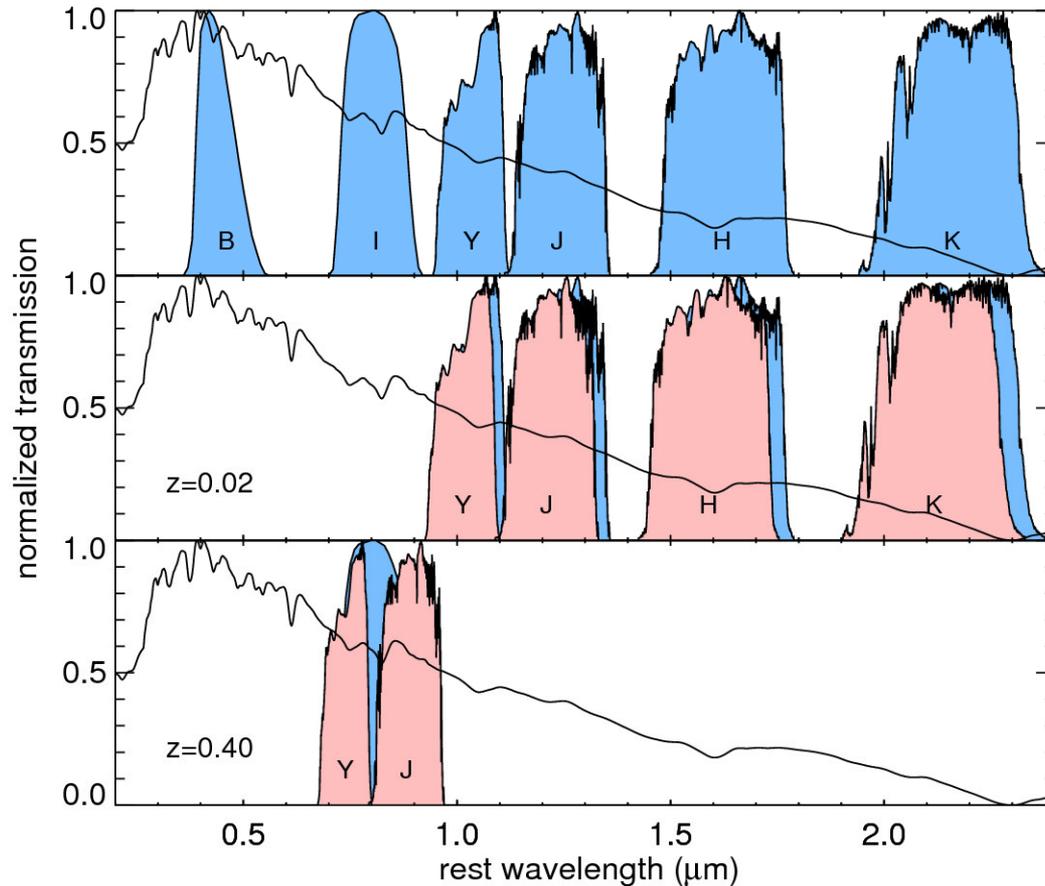


SNe Ia in the near-infrared

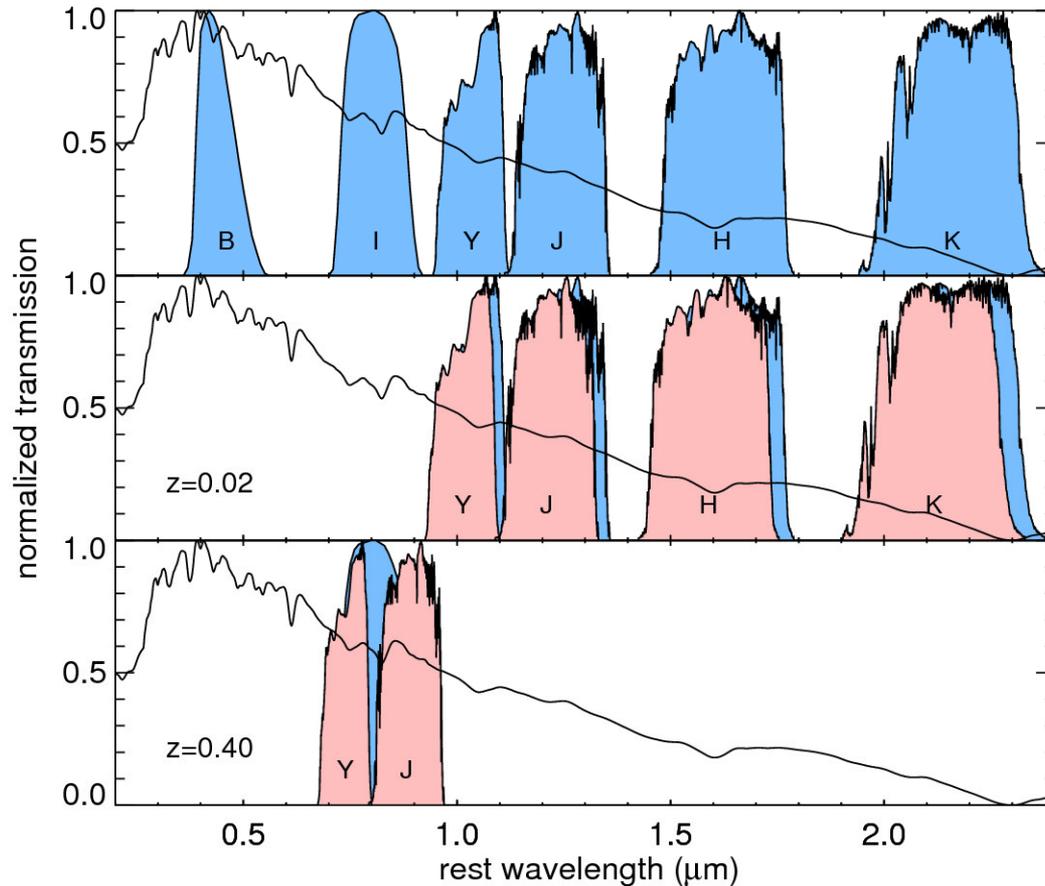


Krisciunas et al. 2004 ApJ, 602, 81

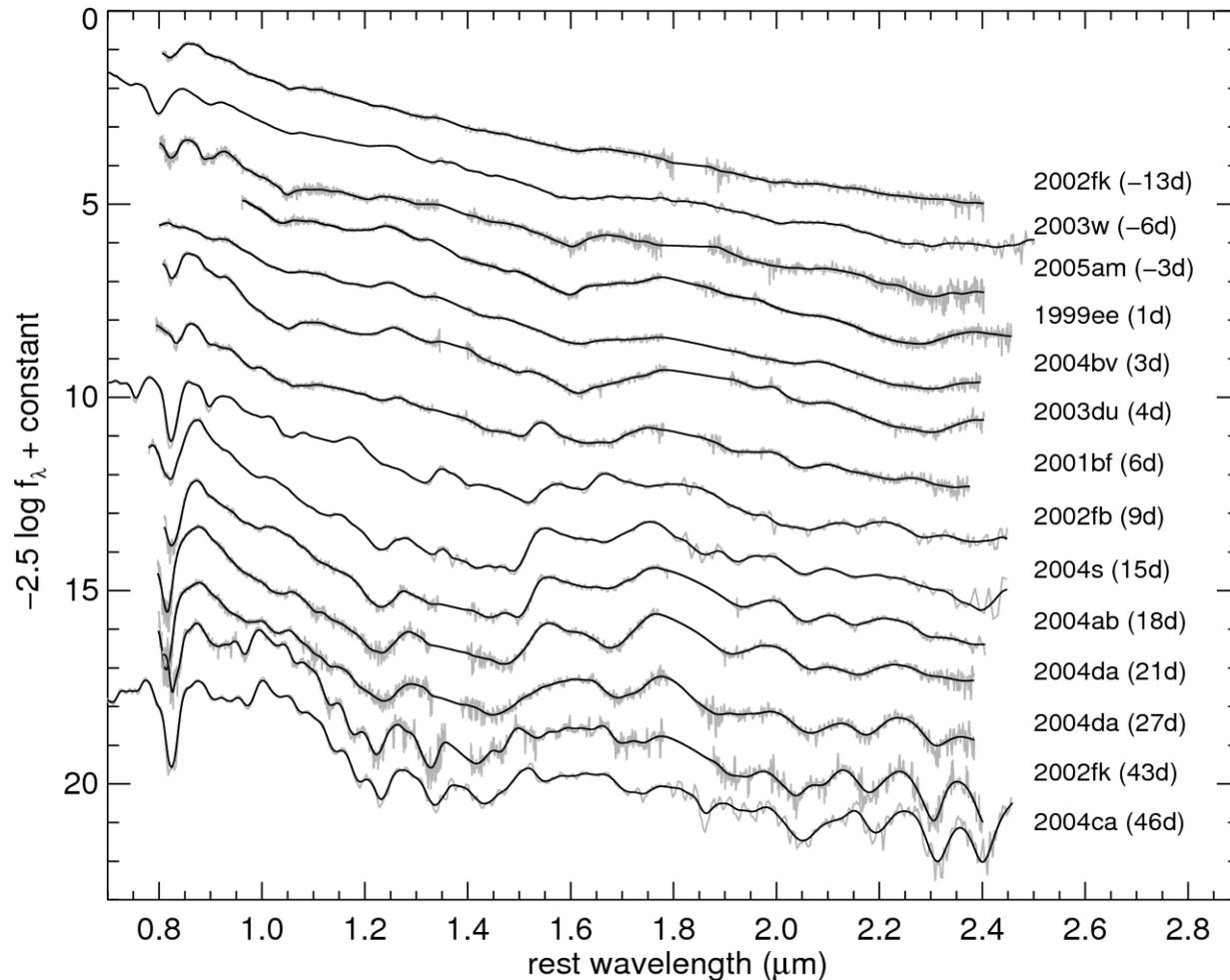
SNe Ia in the near-infrared



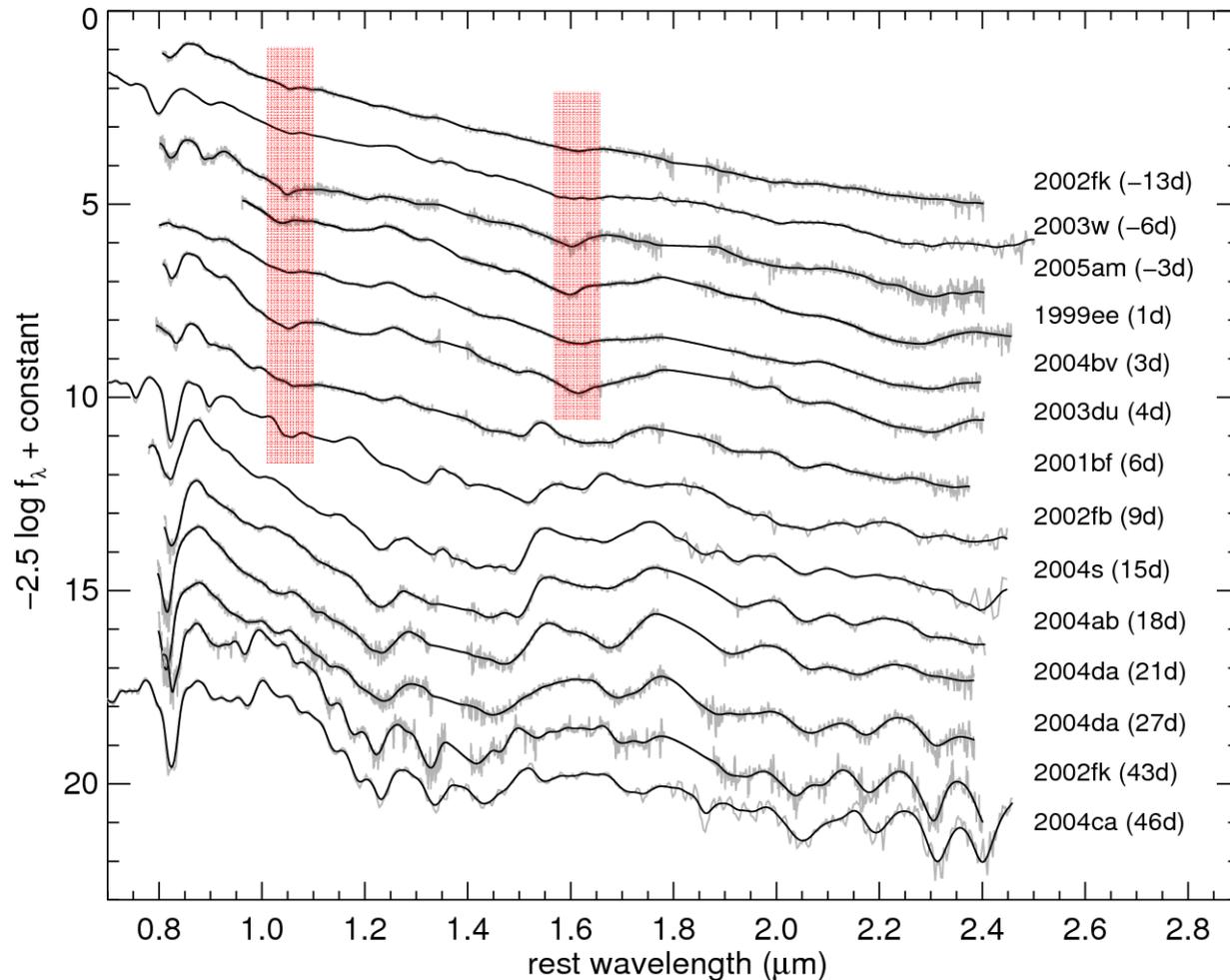
SNe Ia in the near-infrared



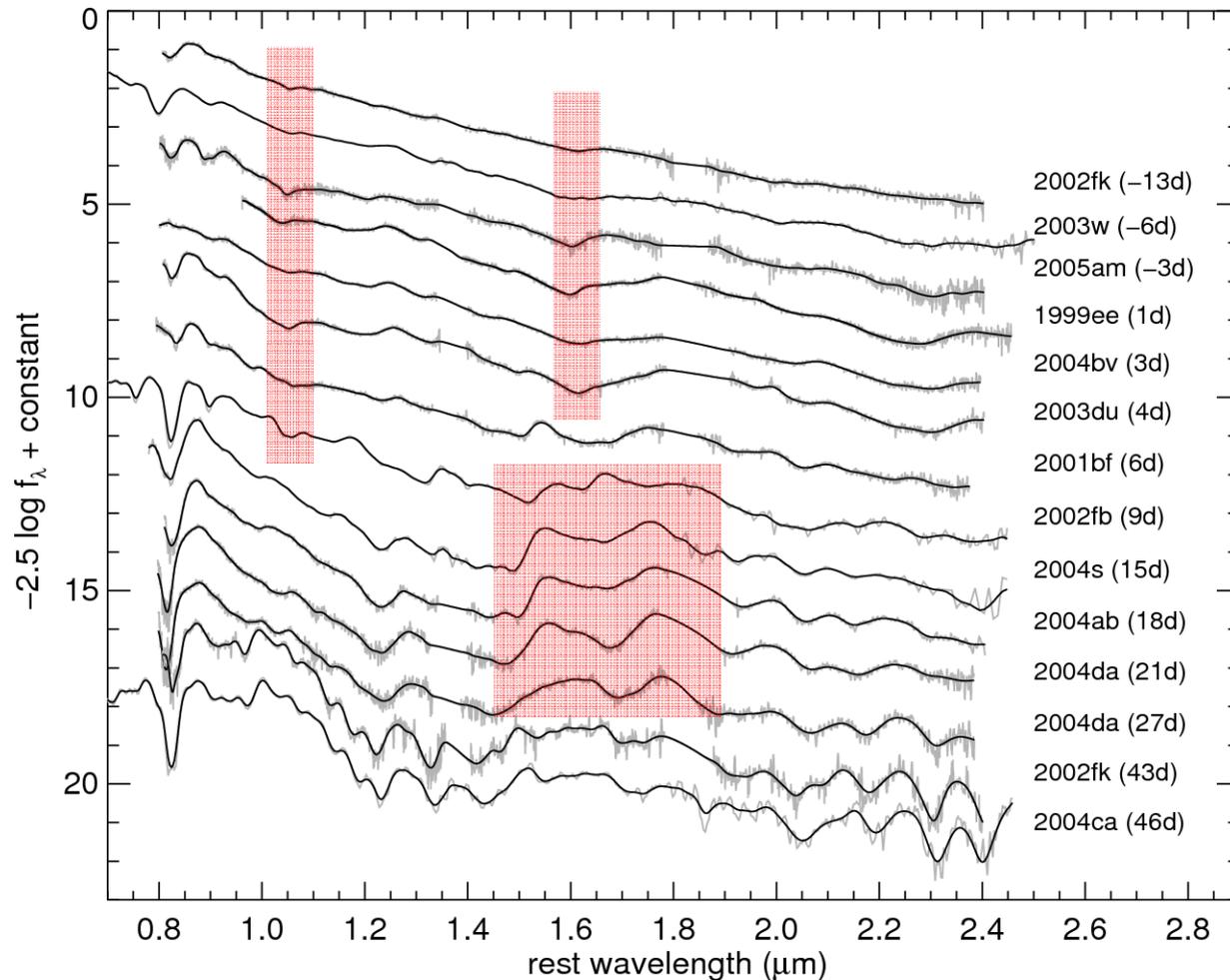
library spectra



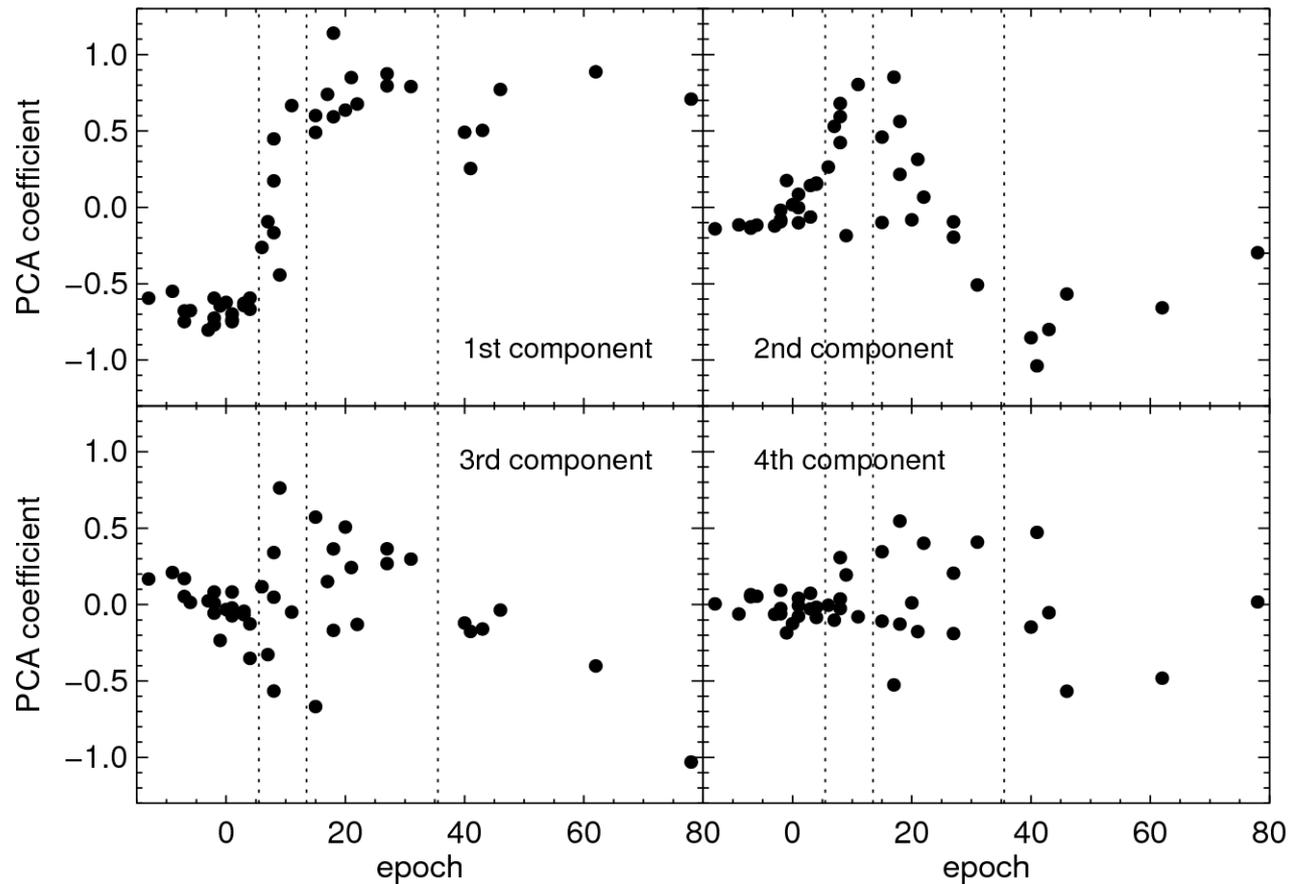
library spectra



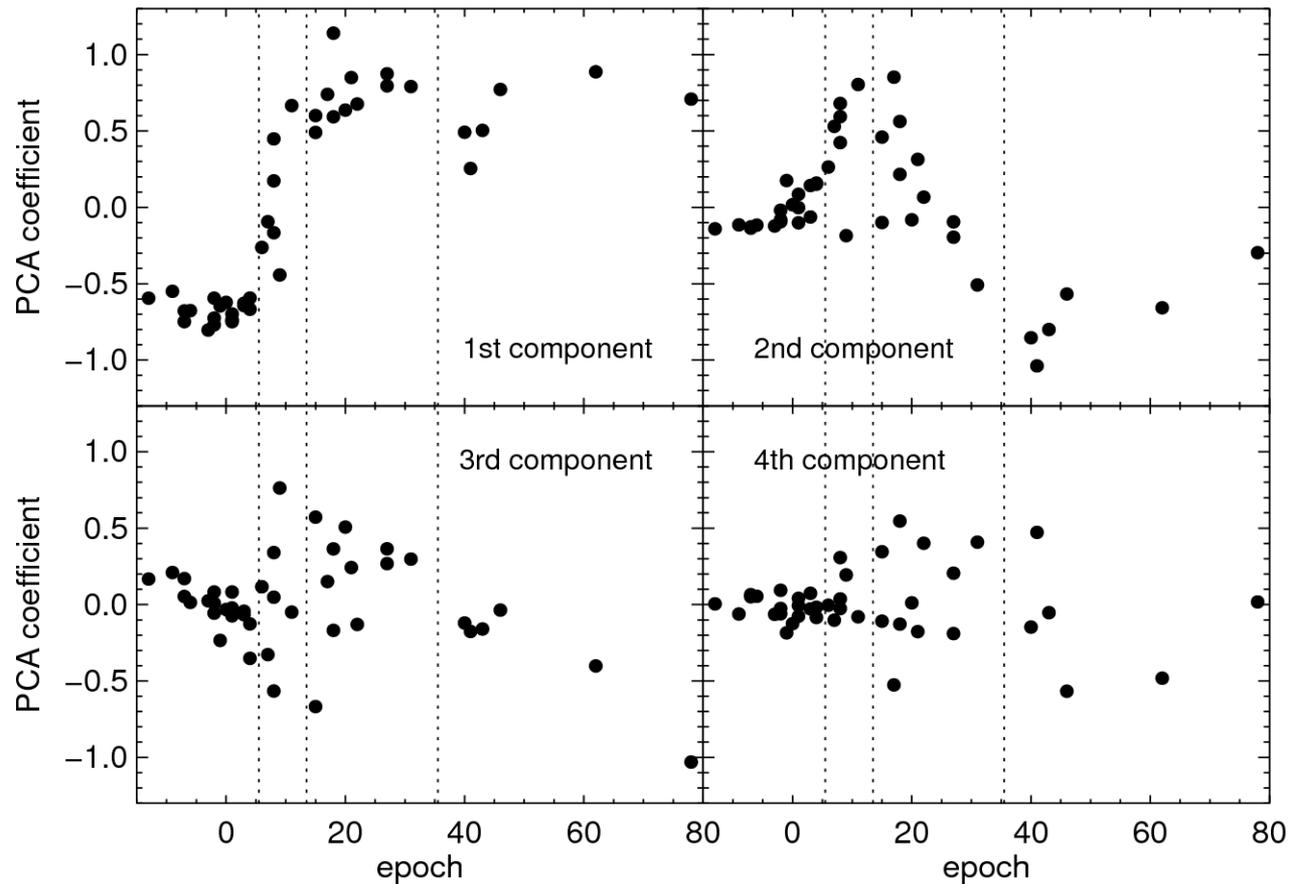
library spectra



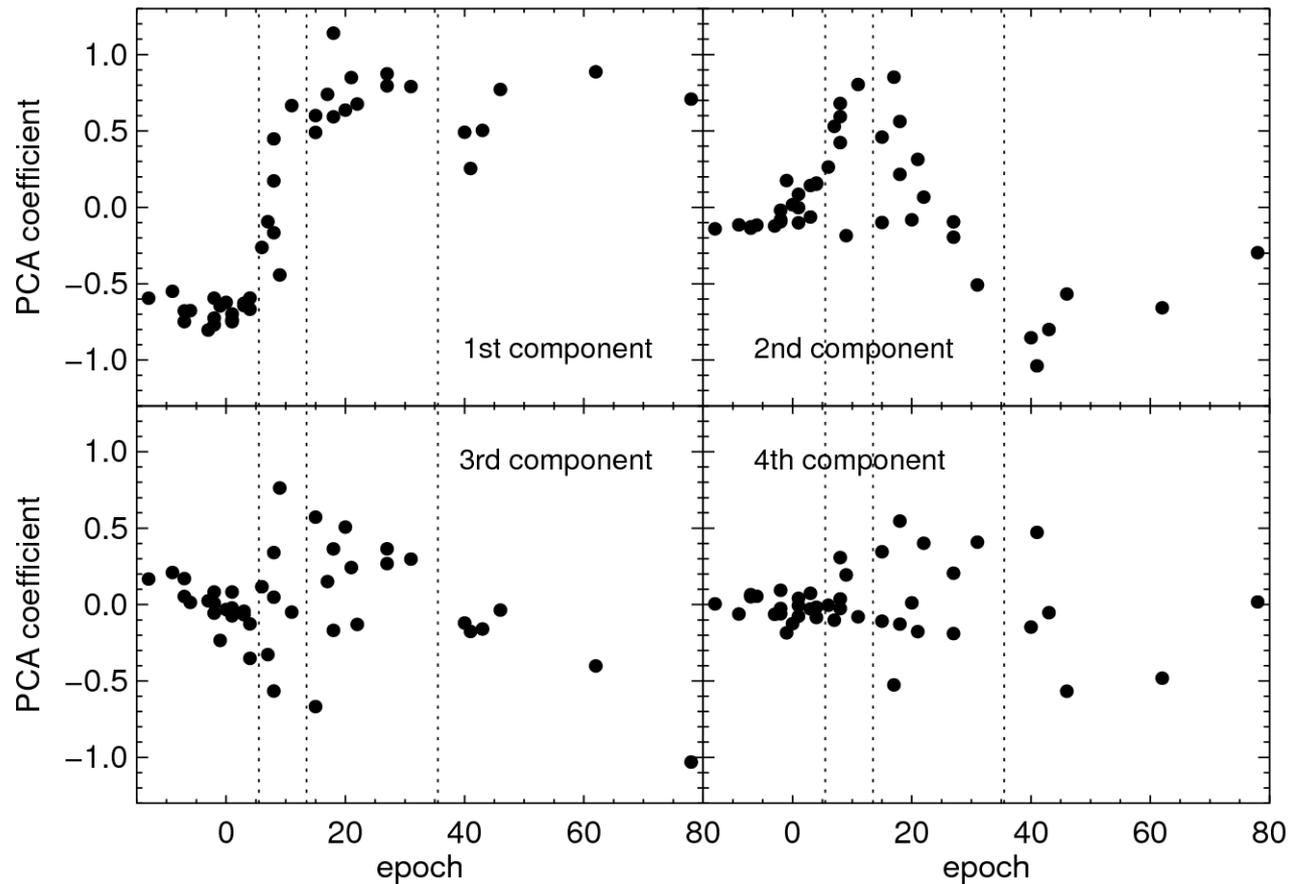
temporal evolution



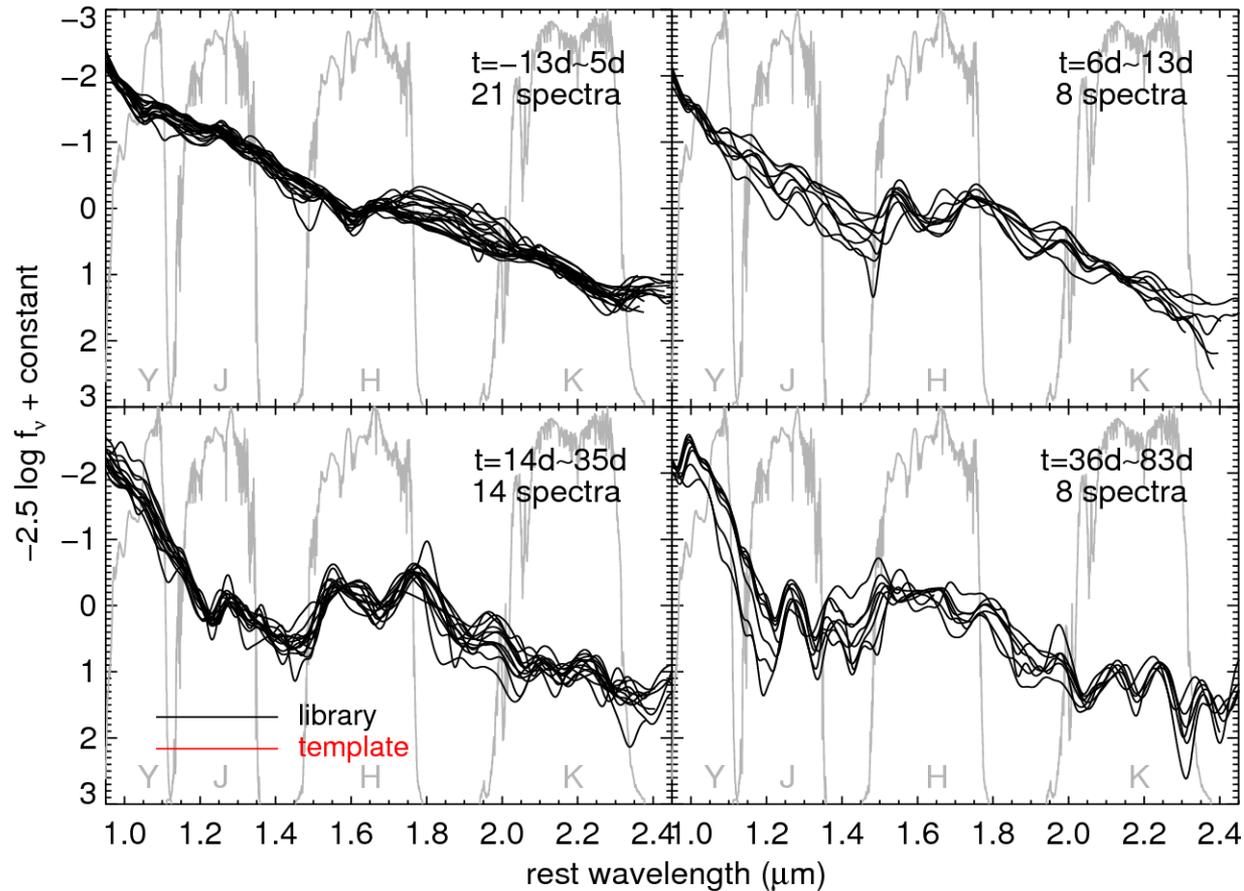
temporal evolution



temporal evolution



spectral template



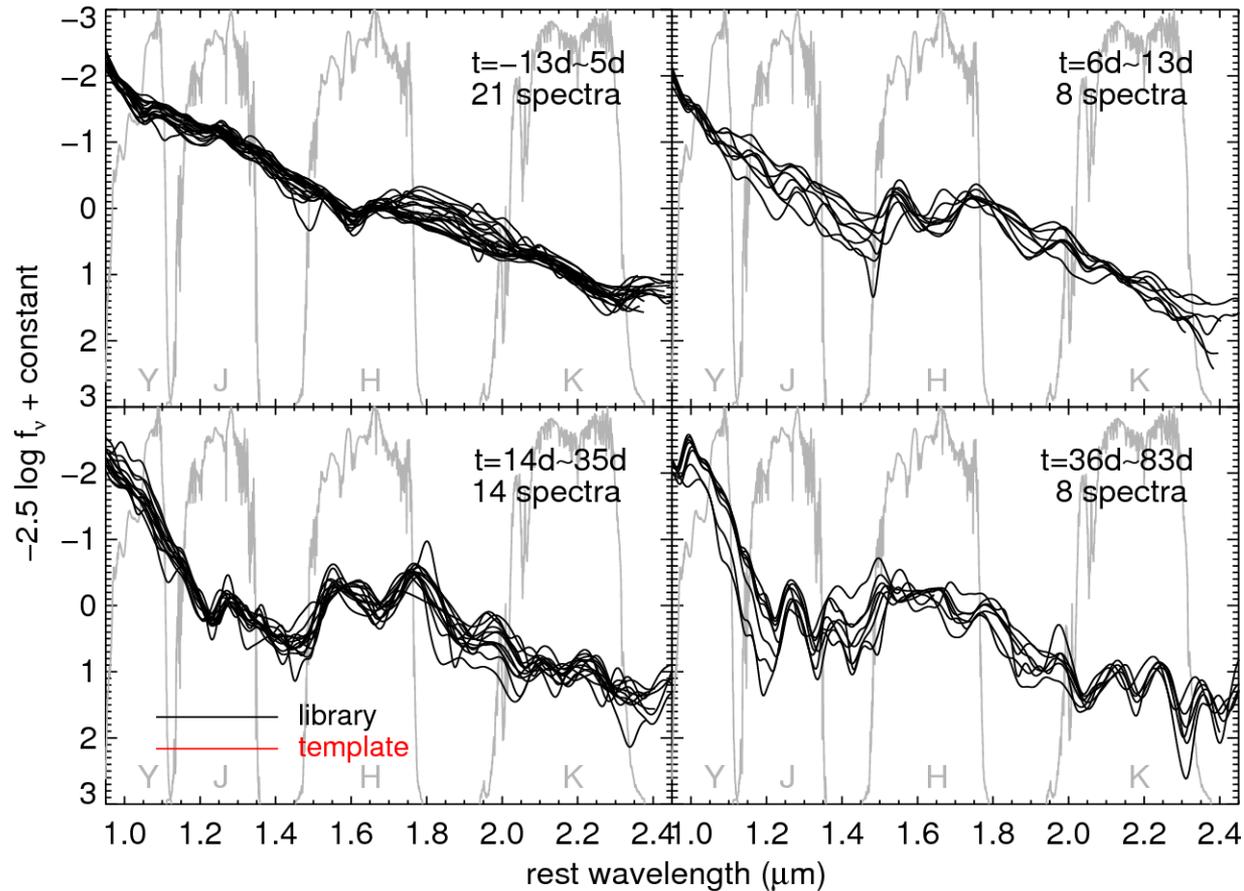
spectral template

procedures for template construction:

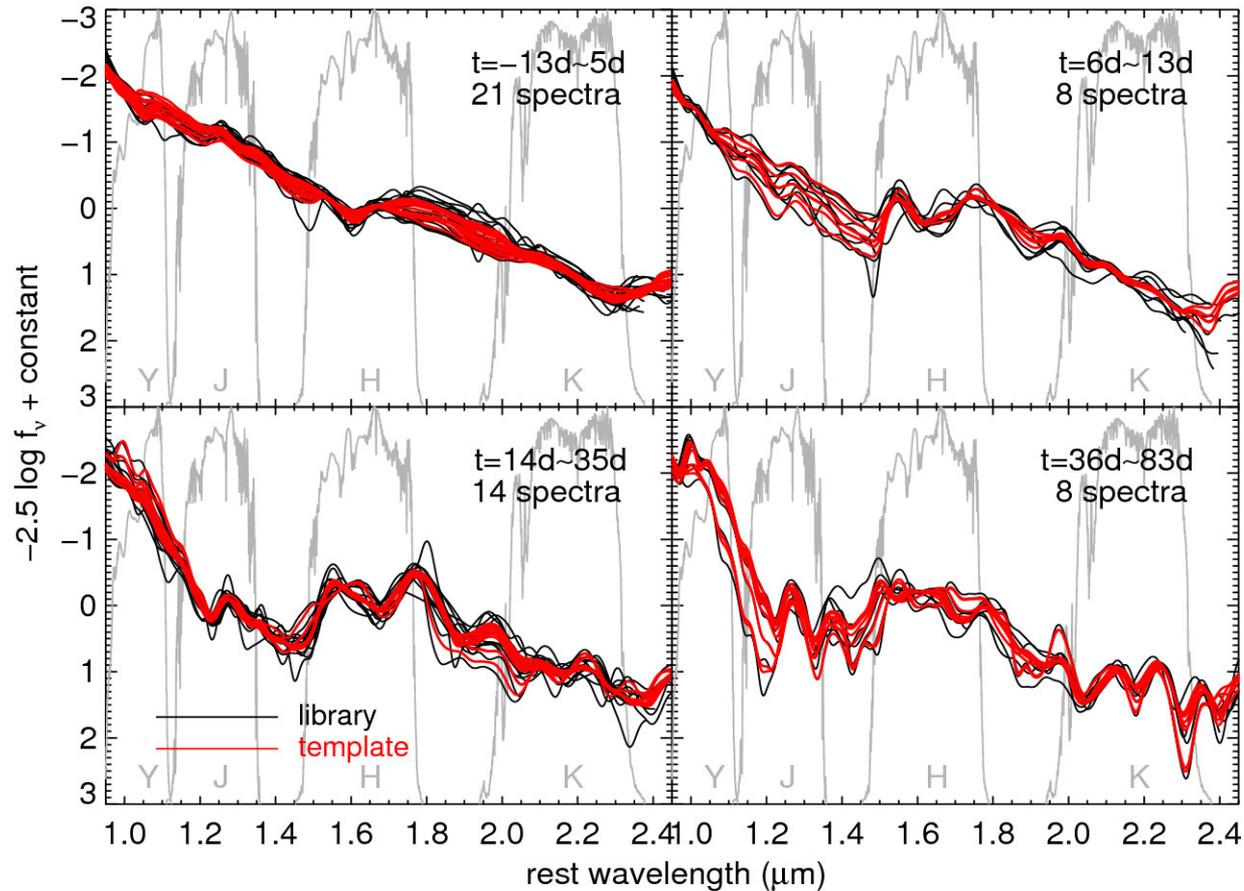
- measure the feature strengths of the library spectra
- determine the weighted mean feature strength at each epoch and wavelength
- adjust the spectral template to the weighted mean feature strengths

Hsiao et al. 2007 ApJ, 663, 1187

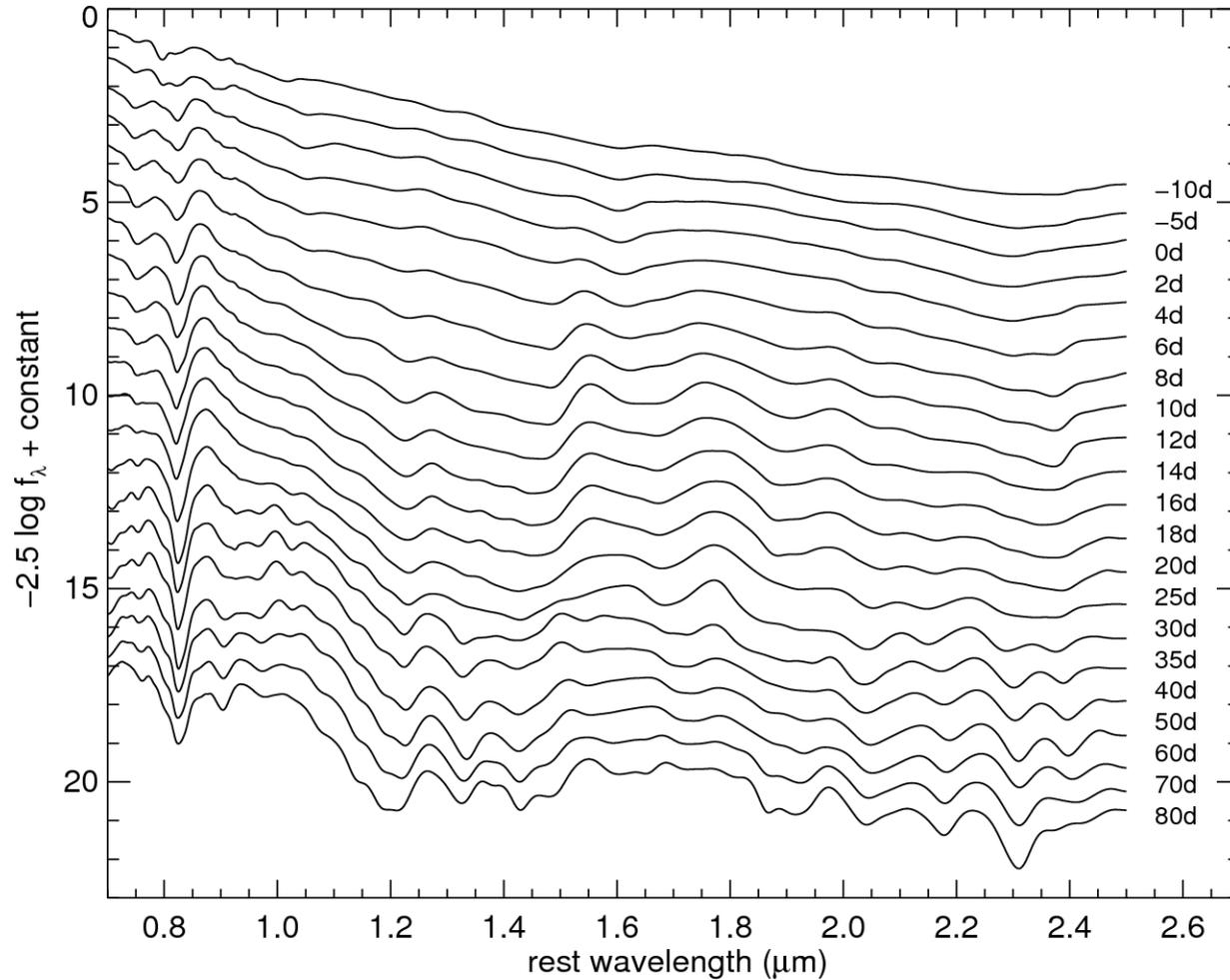
spectral template



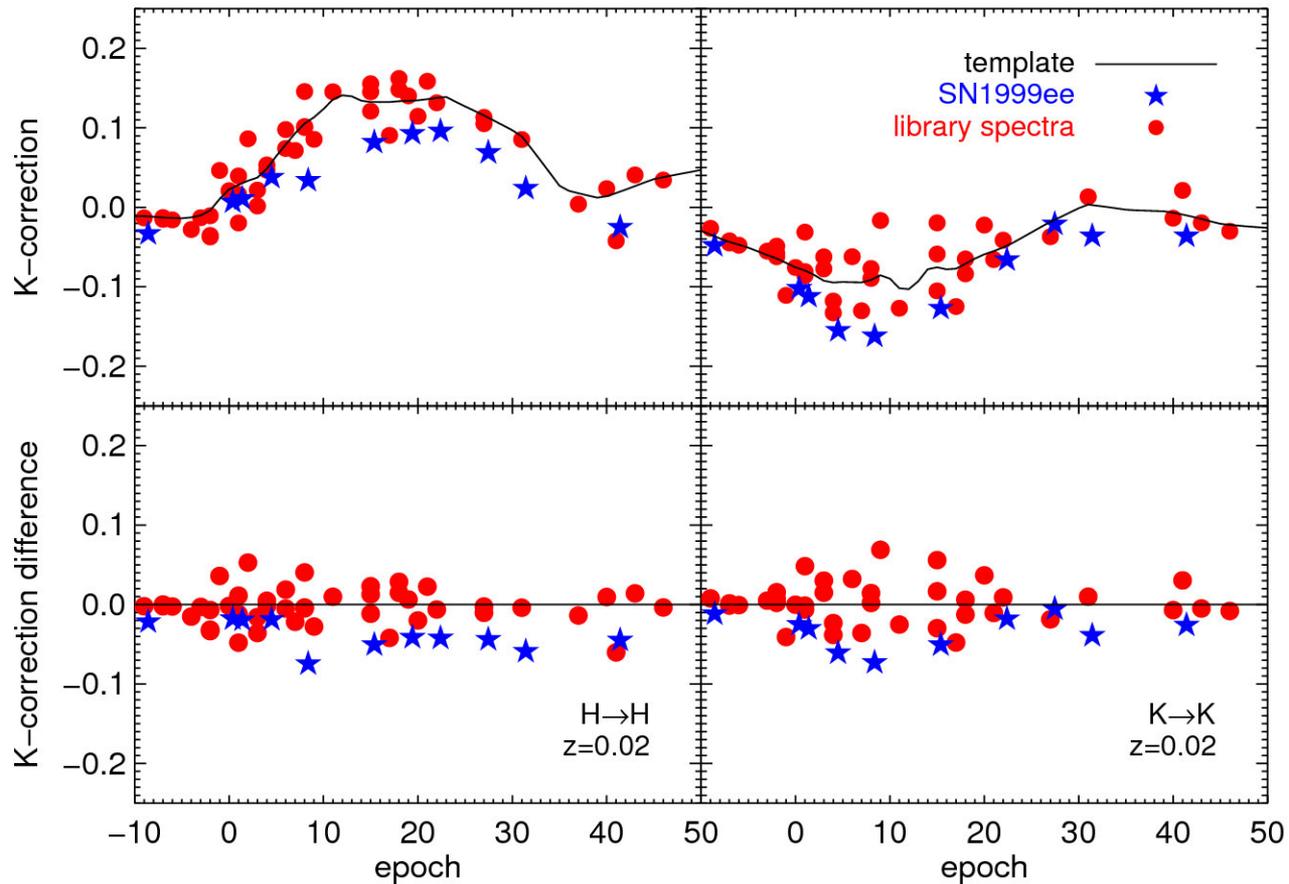
spectral template



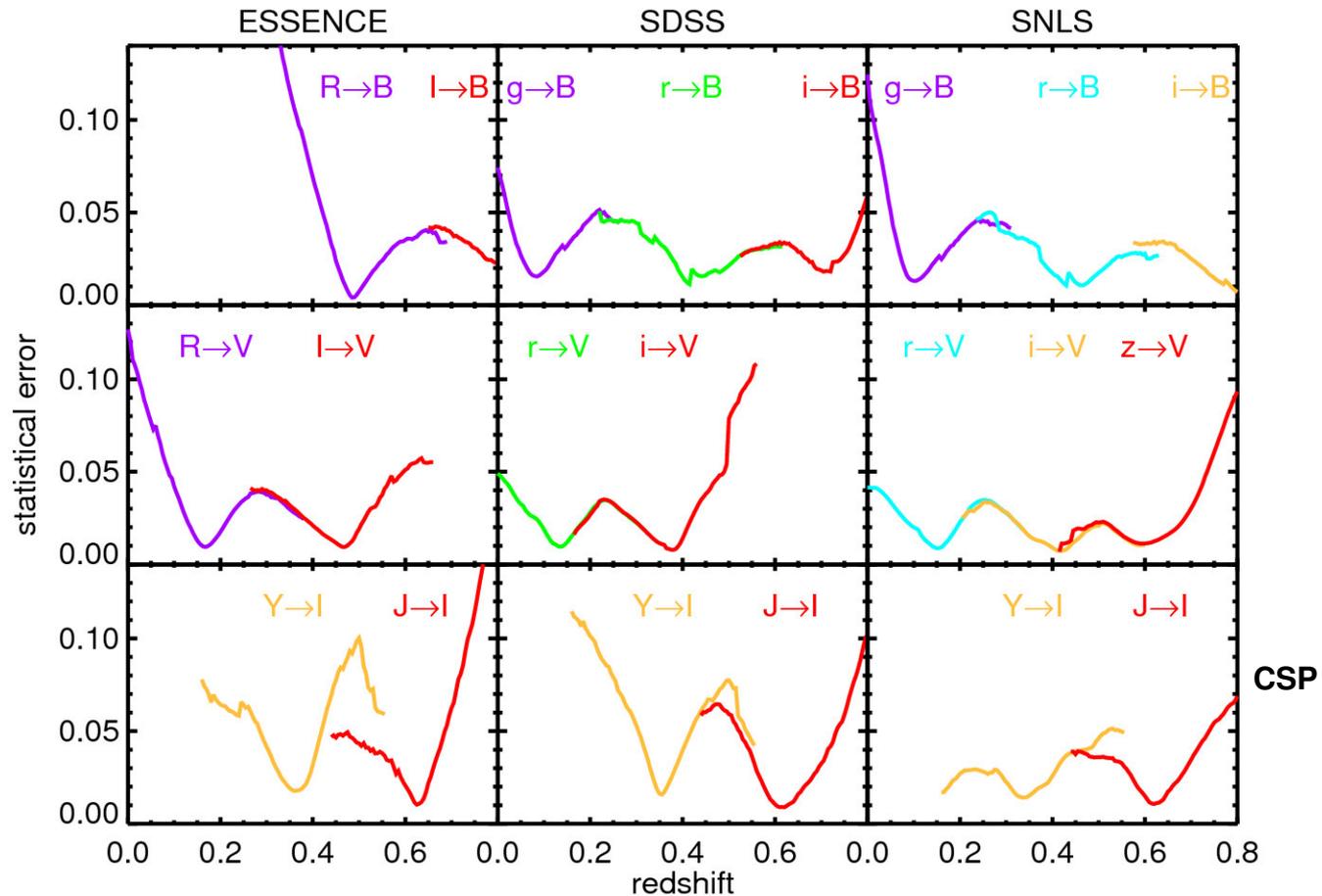
spectral template



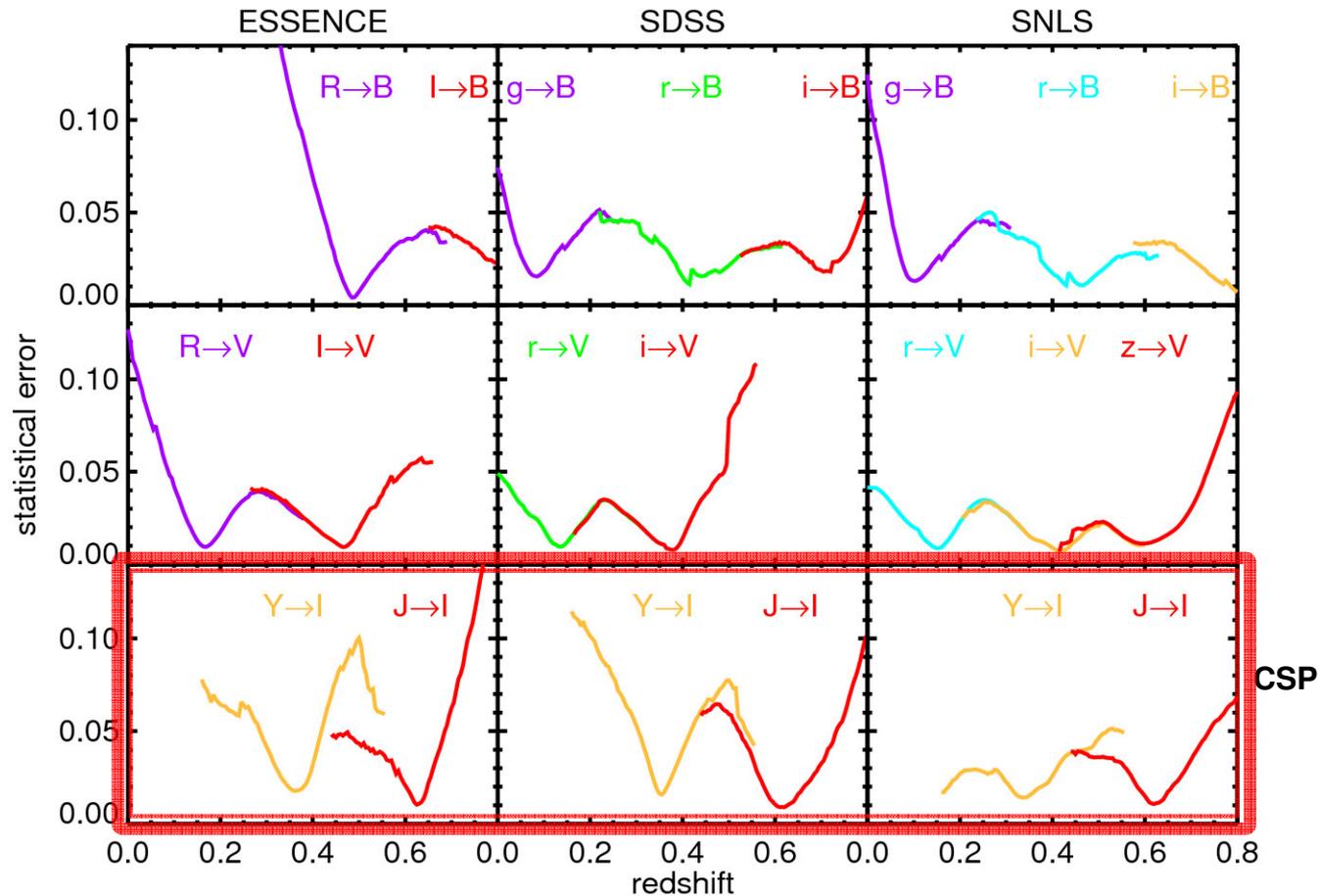
low-redshift k-corrections



high-redshift k-corrections



high-redshift k-corrections



summary

- spectroscopic properties of SNe Ia in the NIR quite uniform
- slow temporal evolution of spectral features → k-correction errors small near NIR maximum
- k-corrections using 1 SN can cause significant systematic errors
- spectroscopic properties in the *I* band as uniform as in the *BV* bands